WHAT IS CLAIMED IS:

1	1. In a receiver section of a relayed communication system, a method for
2	removal of self-interference comprising:
3	modeling downconversion imperfections in a receiver downconverter in said
4	receiver section;
5	compensating for said downconversion imperfections in a received relayed
6	composite signal to produce a compensated composite signal; and
7	canceling self-generated signal portions from said compensated composite
8	signal to provide an output signal for demodulation.
1	2. The method according to claim 1 wherein said receiver downconverter
_ 2	model imperfections include at least one of the following:
<u>[</u> 3	quadrature phase offset, quadrature d.c. imbalance, and quadrature amplitude
2 1 3 1 4	imbalance.
[05	3. The method according to claim 1 wherein said upconversion
[05 [05] 1.16	imperfection compensating step includes setting d.c. level based on said modulated output
7	signal.
∯≟ 1≟1	4. The method according to claim 1 wherein said upconversion
	imperfections compensating step includes comparing at least one of the following:
113	phase and magnitude of said modulated output signal with corresponding
4	characteristics of said replicated modulated user signal.
1	5. In a receiver section of a relayed communication system, a method for
2	removal of self-interference comprising:
3	modeling upconversion imperfections in a transmitter upconverter in a
4	transmitter section; and
5	compensating for said upconversion imperfections to produce a compensated
6	composite signal; while
7	canceling self-generated signal portions from said compensated composite
8	signal to provide an output signal for demodulation.

1	6. The method according to claim 5 wherein said compensating and
2	canceling steps are based on a representation of a self-generated signal and a received relayed
3	composite signal.
1	7. The method according to claim 6 wherein said representation of said
2	self-generated signal is a delayed replicated self-generated signal.
1	8. The method according to claim 5 wherein said transmitter upconverter
2	model imperfections include at least one of the following:
3	quadrature phase offset, quadrature d.c. imbalance, and quadrature amplitude
4	imbalance.
<u>1</u>	9. The method according to claim 5 wherein said upconversion
[<u>]</u> 2	imperfection compensating step includes setting d.c. level based on said modulated output
52 73 401 72	signal.
lg ₁	10. The method according to claim 5 wherein said upconversion
	imperfections compensating step includes comparing at least one of the following:
5 3	phase and magnitude of said modulated output signal with corresponding
44	characteristics of said replicated modulated user signal.
[]1	11. The method according to claim 5 wherein said upconversion
^{1U} 2	imperfections compensating step includes comparing phase of said modulated output signal
3	with corresponding characteristics of said replicated modulated user signal.
1 .	12. The method according to claim 5 wherein said upconversion
2	imperfections compensating step includes correlating said modulated output signal with said
3	replicated modulated user signal.
1	13. The method according to claim 12 wherein said correlating is among
2	any two quadrature components.
1	14. A method for self-interference removal in a relayed communication
2	system comprising:
3	providing a model of an imperfect receiver downconverter;

4	compensating for downconversion imperfections in said imperfect receiver
5	downconverter at the output of said receiver downconverter to remove said downconversion
6	imperfections to produce a compensated composite signal;
7	providing a model of an imperfect transmitter upconverter;
8	replicating a modulated user signal using as input a user baseband signal to
9	produce a replicated modulated user signal;
10	compensating for upconversion imperfections in said imperfect transmitter
11	upconverter on said replicated modulated user signal to remove said upconversion
12	imperfections to produce a compensated replicated modulated user signal; and
13	canceling said compensated replicated modulated user signal from said
14	compensated composite signal to provide a modulated output signal.
. 1	15. The method according to claim 14 wherein said receiver
132 132	downconverter model imperfections include at least one of the following:
₩3 -	quadrature phase offset, quadrature d.c. imbalance, and quadrature amplitude
13 14 15 15 15 15 15 15 15 15 15 15 15 15 15	imbalance.
*** <u> </u> 1	16. The method according to claim 14 wherein said transmitter
(j 2	upconverter model imperfections include at least one of the following:
<u> </u> ≟3	quadrature phase offset, quadrature d.c. imbalance, and quadrature amplitude
П4 П	imbalance.
IJ IJ	
1	17. The method according to claim 14 wherein said receiver
2	downconverter model imperfections include at least one of the following:
3	quadrature phase offset, quadrature d.c. imbalance, and quadrature amplitude
4	imbalance; and wherein
5	said transmitter upconverter model imperfections include at least one of the
6	following:
7	quadrature phase offset, quadrature d.c. imbalance, and quadrature amplitude
8	imbalance.
1	18. The method according to claim 14 wherein said upconversion
1	
2	imperfection compensating step includes setting d.c. level based on said modulated output
3	signal.

1	19. The method according to claim 14 wherein said upconversion
2	imperfections compensating step includes comparing at least one of the following:
3	phase and magnitude of said modulated output signal with corresponding
4	characteristics of said replicated modulated user signal.
1	20. The method according to claim 14 wherein said downconversion
2	imperfection compensating step includes setting d.c. level based on output level of said
3	downconverter.
1	21. The method according to claim 20 wherein said downconversion
2	imperfections compensating step includes comparing at least one of the following:
3	phase and magnitude of the output of said downconverter with corresponding
4	characteristics of said compensated composite signal.
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} <u></u> 42	imperfections compensating step includes comparing phase of said modulated output signal
(Ū3 ;j	with corresponding characteristics of said replicated modulated user signal.
<u> </u>	23. The method according to claim 14 wherein said upconversion
<u>1</u> = 2	imperfections compensating step includes correlating said modulated output signal with said
IJ3 С	replicated modulated user signal.
^{1U} 1	24. The method according to claim 23 wherein said correlating is among
2	any two quadrature components.
1	25. An apparatus for self-interference removal in a relayed communication
2	system comprising:
3	a first compensator for compensating for downconversion imperfections in
4	said imperfect receiver downconverter at the output of said receiver downconverter to remove
5	said downconversion imperfections to produce a compensated composite signal;
6	a replicator for replicating a modulated user signal using as input a user
7	baseband signal to produce a replicated modulated user signal;
8	a second compensator for compensating for upconversion imperfections in
9	said imperfect transmitter upconverter on said replicated modulated user signal to remove

and /
a canceller for canceling said compensated replicated modulated user signal
from said compensated composite signal to provide a modulated output signal.
26. In a receiver section of a relayed communication system, an apparatus
for removal of self-interference comprising:
a compensator for compensating for said downconversion imperfections in a
received relayed composite signal to produce a compensated composite signal; and
a canceler for canceling self-generated signal portions from said compensated
composite signal to provide an output signal for demodulation.
27. In a receiver section of a relayed communication system, an apparatus
for removal of self-interference comprising:
a compensator for compensating for said upconversion imperfections to
produce a compensated composite signal; and
a canceller for canceling self-generated signal portions from said compensated
composite signal to provide an output signal for demodulation.